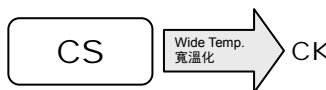


STANDARD

標準品

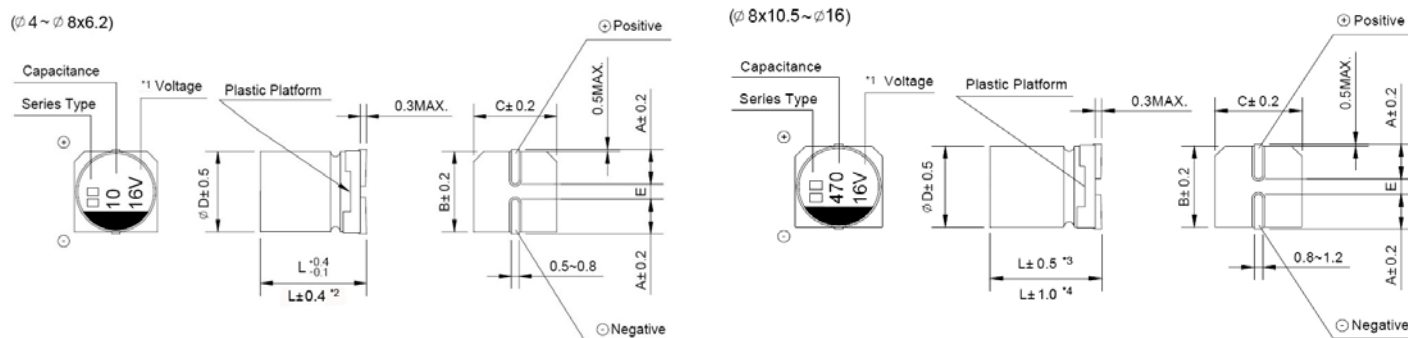
- Operating with general temperature range -40 ~ +85°C  
適用於 -40 ~ +85°C 的常規溫度範圍
- Load life of 2000 hours  
負荷壽命 2000 小時
- Comply with the RoHS directive  
符合 RoHS 指令



□ SPECIFICATIONS 特性表

Items 項目	Characteristics 主要特性																																											
Operation Temperature Range 使用溫度範圍	-40 ~ +85°C																																											
Voltage Range 額定工作電壓範圍	4 ~ 100V																																											
Capacitance Range 靜電容量範圍	0.1 ~ 6800µF																																											
Capacitance Tolerance 靜電容量允許偏差	±20% at 120Hz, 20°C																																											
Leakage Current 漏電流	Leakage current (∅4~∅10) ≤0.01CV or 3µA, whichever is greater (after 2 minutes application of rated voltage) Leakage current (∅12.5~∅16) ≤0.03CV or 4µA, whichever is greater (after 1 minute application of rated voltage) 漏電流 (∅4~∅10) ≤0.01CV 或 3µA, 取較大值 (施加額定工作電壓 2 分鐘後) 漏電流 (∅12.5~∅16) ≤0.03CV 或 4µA, 取較大值 (施加額定工作電壓 1 分鐘後)																																											
Dissipation Factor (tan δ) 損耗角正切	Measurement frequency 測試頻率: 120Hz, Temperature 溫度: 20°C <table border="1"> <tr> <td>Rated Voltage (V) 額定工作電壓</td> <td>4</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>tan δ (max.) 最大損耗角正切</td> <td>∅4~∅10</td> <td>0.42</td> <td>0.28</td> <td>0.24</td> <td>0.20</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> <td>0.10</td> </tr> <tr> <td></td> <td>∅12.5~∅16</td> <td>0.45</td> <td>0.38</td> <td>0.34</td> <td>0.30</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.14</td> </tr> </table>	Rated Voltage (V) 額定工作電壓	4	6.3	10	16	25	35	50	63	100	tan δ (max.) 最大損耗角正切	∅4~∅10	0.42	0.28	0.24	0.20	0.14	0.12	0.12	0.10		∅12.5~∅16	0.45	0.38	0.34	0.30	0.26	0.22	0.18	0.14													
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	∅12.5~∅16	0.45	0.38	0.34	0.30	0.26	0.22	0.18	0.14																																			
Stability at Low Temperature 低溫特性	Measurement frequency 測試頻率: 120Hz <table border="1"> <tr> <td colspan="2">Rated Voltage (V) 額定工作電壓</td> <td>4</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50~100</td> </tr> <tr> <td rowspan="2">Impedance Ratio 阻抗比 ZT/Z20 (max.)</td> <td rowspan="2">∅4~∅10</td> <td>Z(-25°C) / Z(20°C)</td> <td>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C) / Z(20°C)</td> <td>15</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> <tr> <td rowspan="2"></td> <td rowspan="2">∅12.5~∅16</td> <td>Z(-25°C) / Z(20°C)</td> <td>7</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C) / Z(20°C)</td> <td>17</td> <td>12</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> </tr> </table>	Rated Voltage (V) 額定工作電壓		4	6.3	10	16	25	35	50~100	Impedance Ratio 阻抗比 ZT/Z20 (max.)	∅4~∅10	Z(-25°C) / Z(20°C)	7	4	3	2	2	2	Z(-40°C) / Z(20°C)	15	8	6	4	4	3	3		∅12.5~∅16	Z(-25°C) / Z(20°C)	7	5	4	3	2	2	Z(-40°C) / Z(20°C)	17	12	10	8	5	4	3
Rated Voltage (V) 額定工作電壓		4	6.3	10	16	25	35	50~100																																				
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		Z(-40°C) / Z(20°C)	15	8	6	4	4	3	3																																			
	∅12.5~∅16	Z(-25°C) / Z(20°C)	7	5	4	3	2	2																																				
		Z(-40°C) / Z(20°C)	17	12	10	8	5	4	3																																			
Load Life 高溫負荷特性	After 2000 hours application of the rated voltage at 85°C, they meet the characteristics listed below. 在 85°C 環境中施加額定工作電壓 2000 小時後, 電容器的特性符合下表的要求。 <table border="1"> <tr> <td>Capacitance Change 靜電容量變化率</td> <td>Within ±20% of initial value (Within ±30% of initial value for 4V) 初始值的±20%以內 (4V 為±30%以內)</td> </tr> <tr> <td>Dissipation Factor 損耗角正切</td> <td>200% or less of initial specified value 不大於規範值的 200%</td> </tr> <tr> <td>Leakage Current 漏電流</td> <td>initial specified value or less 不大於規範值</td> </tr> </table>	Capacitance Change 靜電容量變化率	Within ±20% of initial value (Within ±30% of initial value for 4V) 初始值的±20%以內 (4V 為±30%以內)	Dissipation Factor 損耗角正切	200% or less of initial specified value 不大於規範值的 200%	Leakage Current 漏電流	initial specified value or less 不大於規範值																																					
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Leakage Current 漏電流	initial specified value or less 不大於規範值																																											
Shelf Life 高溫貯存特性	After leaving capacitors under no load at 85°C for 1000 hours, they meet the specified value for load life characteristics listed above. 在 85°C 環境中無負荷放置 1000 小時後, 電容器的特性符合高溫負荷特性中所列的規定值。																																											
Resistance to Soldering Heat 耐焊接熱特性	After reflow soldering and restored at room temperature, they meet the characteristics listed below. 經過回流焊並冷卻至室溫後, 電容器的特性符合下表的要求。 <table border="1"> <tr> <td>Capacitance Change 靜電容量變化率</td> <td>Within ±10% of initial value 初始值的±10%以內</td> </tr> <tr> <td>Dissipation Factor 損耗角正切</td> <td>initial specified value or less 不大於規範值</td> </tr> <tr> <td>Leakage Current 漏電流</td> <td>initial specified value or less 不大於規範值</td> </tr> </table>	Capacitance Change 靜電容量變化率	Within ±10% of initial value 初始值的±10%以內	Dissipation Factor 損耗角正切	initial specified value or less 不大於規範值	Leakage Current 漏電流	initial specified value or less 不大於規範值																																					
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Leakage Current 漏電流	initial specified value or less 不大於規範值																																											
Marking 標識	Black print on the case top. 鋁殼頂部黑字印刷。																																											

□ DRAWING (Unit: mm) 外形圖



- \*1. Voltage mark for 6.3V is [6V]      6.3V 的產品標識為 [6V]
- \*2. Applicable to ∅6.3x7.7      適用於∅6.3x7.7
- \*3. Applicable to ∅8x10.5~∅10      適用於∅8x10.5~∅10
- \*4. Applicable to ∅12.5~∅16      適用於∅12.5~∅16

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□ DIMENSIONS (Unit: mm) 尺寸表

∅D x L	4 x 5.4	5 x 5.4	6.3 x 5.4	6.3 x 7.7	8 x 6.2	8 x 10.5	10 x 10.5	10 x 13.5	12.5 x 13.5	12.5 x 16	16 x 16.5
A	2.0	2.2	2.6	2.6	3.4	3.0	3.3	3.3	4.9	4.9	5.8
B	4.3	5.3	6.6	6.6	8.4	8.4	10.4	10.4	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.4	8.4	10.4	10.4	13.0	13.0	17.0
E ± 0.2	1.0	1.4	1.9	1.9	2.3	3.1	4.7	4.7	4.7	4.7	6.4
L	5.4	5.4	5.4	7.7	6.2	10.5	10.5	13.5	13.5	16.0	16.5

□ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT 規格尺寸及最大允許紋波電流

WV Code 代碼	μF	4		6.3		10		16		25	
		OG		OJ		1A		1C		1E	
4.7	4R7									4 x 5.4	19
10	100							4 x 5.4	25	5 x 5.4 (4 x 5.4)	28 (20)
15	150							4 x 5.4	28	5 x 5.4	34
22	220			4 x 5.4	31	5 x 5.4 (4 x 5.4)	35 (28)	5 x 5.4 (4 x 5.4)	39 (28)	6.3 x 5.4 (5 x 5.4)	52 (35)
33	330	4 x 5.4	26	5 x 5.4 (4 x 5.4)	39 (31)	5 x 5.4 (4 x 5.4)	43 (32)	6.3 x 5.4 (5 x 5.4)	57 (40)	6.3 x 5.4 (5 x 5.4)	63 (42)
47	470	4 x 5.4	34	5 x 5.4 (4 x 5.4)	47 (36)	6.3 x 5.4 (5 x 5.4)	59 (43)	6.3 x 5.4 (5 x 5.4)	68 (44)	6.3 x 5.4	68
56	560	4 x 5.4	39	5 x 5.4	46	6.3 x 5.4	57	6.3 x 5.4	74	6.3 x 5.4	82
68	680	5 x 5.4	45	6.3 x 5.4 (5 x 5.4)	62 (52)	6.3 x 5.4	72	6.3 x 5.4	80	6.3 x 5.4	94
100	101	5 x 5.4	61	6.3 x 5.4 (5 x 5.4)	71 (55)	6.3 x 5.4	76	6.3 x 5.4 (8 x 6.2)	86 (200)	6.3 x 7.7 (8 x 6.2)	130 (91)
150	151	6.3 x 5.4	74	6.3 x 5.4	78	6.3 x 5.4	88	6.3 x 7.7	135	8 x 10.5 (6.3 x 7.7)	200 (130)
220	221	6.3 x 5.4	82	6.3 x 5.4	95	6.3 x 7.7 (8 x 6.2)	150 (250)	8 x 10.5 (6.3 x 7.7) (8 x 6.2)	215 (150) (135)	8 x 10.5	250
330	331	6.3 x 7.7	150	6.3 x 7.7 (8 x 6.2)	150 (300)	8 x 10.5	280	8 x 10.5	280	10 x 10.5 (8 x 10.5)	340 (310)
470	471	6.3 x 7.7	150	8 x 10.5 (6.3 x 7.7)	300 (150)	10 x 10.5 (8 x 10.5)	320 (300)	10 x 10.5 (8 x 10.5)	420 (330)	10 x 10.5	400
680	681	8 x 10.5	300	8 x 10.5	300	10 x 10.5	380	10 x 10.5	450	10 x 13.5	550
1000	102	8 x 10.5	330	10 x 10.5 (8 x 10.5)	430 (330)	10 x 10.5	450	12.5 x 13.5 (10 x 13.5) (10 x 10.5)	710 (550) (490)	12.5 x 13.5	820
1500	152	10 x 10.5	450	10 x 13.5 (10 x 10.5)	650 (450)	10 x 13.5	650	12.5 x 13.5	750	12.5 x 16	1000
2200	222	10 x 13.5 (10 x 10.5)	620 (480)	12.5 x 13.5 (10 x 13.5)	890 (720)	12.5 x 13.5	960	16 x 16.5 (12.5 x 16)	1150 (1000)	16 x 16.5	1250
3300	332	10 x 13.5	700	12.5 x 16 (12.5 x 13.5)	1000 (900)	16 x 16.5 (12.5 x 16)	1300 (1050)	16 x 16.5	1350		
4700	472	12.5 x 13.5	850	16 x 16.5	1400	16 x 16.5	1450			Case size 尺寸	Ripple current 紋波電流
6800	682	16 x 16.5 (12.5 x 16)	1350 (900)								

WV Code 代碼	μF	35		50		63		100	
		1V		1H		1J		2A	
0.1	0R1			4 x 5.4	1.0	4 x 5.4	1.0		
0.22	R22			4 x 5.4	2.3	4 x 5.4	2.3		
0.33	R33			4 x 5.4	3.5	4 x 5.4	3.5		
0.47	R47			4 x 5.4	5.0	4 x 5.4	5.0		
1	010			4 x 5.4	10	4 x 5.4	10	4 x 5.4	10
1.5	1R5			4 x 5.4	12	4 x 5.4	12	6.3 x 5.4	15
2.2	2R2			4 x 5.4	15	4 x 5.4	15	6.3 x 5.4	20
3.3	3R3	4 x 5.4	18	4 x 5.4	18	5 x 5.4	20	6.3 x 7.7 (6.3 x 5.4) (8 x 6.2)	45 (28) (50)
4.7	4R7	4 x 5.4	20	5 x 5.4 (4 x 5.4)	23 (19)	6.3 x 5.4 (5 x 5.4)	30 (23)	6.3 x 7.7 (6.3 x 5.4) (8 x 6.2)	50 (30) (50)
10	100	5 x 5.4 (4 x 5.4)	30 (20)	6.3 x 5.4 (5 x 5.4)	34 (27)	6.3 x 7.7 (6.3 x 5.4)	55 (34)	8 x 10.5 (6.3 x 7.7) (8 x 6.2)	110 (50) (50)
22	220	6.3 x 5.4	54	6.3 x 5.4 (8 x 6.2)	60 (120)	8 x 10.5 (6.3 x 7.7) (8 x 6.2)	140 (70) (35)	10 x 10.5 (8 x 10.5)	180 (120)
33	330	6.3 x 5.4 (8 x 6.2)	60 (130)	6.3 x 7.7 (8 x 6.2)	85 (65)	8 x 10.5 (6.3 x 7.7)	160 (85)	10 x 10.5	190
47	470	6.3 x 5.4 (8 x 6.2)	70 (165)	10 x 10.5 (8 x 10.5) (6.3 x 7.7)	130 (110) (90)	10 x 10.5 (8 x 10.5)	230 (170)	Case size 尺寸	Ripple current 紋波電流

•Case size ∅DxL(mm), ripple current (mA rms) at 85°C 120Hz •尺寸∅DxL(mm), 紋波電流(mA rms)於 85°C 120Hz

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□ DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT 規格尺寸及最大允許紋波電流

μF	WV Code 代碼	35		50		63		100	
		1V		1H		1J		2A	
56	560	6.3 × 7.7		6.3 × 7.7		10 × 10.5			
68	680	6.3 × 7.7		8 × 10.5		10 × 10.5			
100	101	8 × 10.5 (6.3 × 7.7)		10 × 10.5 (8 × 10.5)		12.5 × 13.5 (10 × 13.5) (10 × 10.5)		12.5 × 13.5 440	
150	151	8 × 10.5		10 × 10.5		10 × 13.5			
220	221	10 × 10.5 (8 × 10.5)		10 × 13.5 (10 × 10.5)		12.5 × 13.5 (10 × 13.5)		16 × 16.5 700	
330	331	10 × 10.5		12.5 × 13.5 (10 × 13.5)		16 × 16.5 (12.5 × 16)			
470	471	12.5 × 13.5 (10 × 13.5) (10 × 10.5)		16 × 16.5 (12.5 × 16)		16 × 16.5			
680	681	12.5 × 13.5 (10 × 13.5)		16 × 16.5				Case size 尺寸 Ripple current 紋波電流	
1000	102	16 × 16.5 (12.5 × 16)							

•Case size  $\varnothing D \times L$ (mm), ripple current (mA rms) at 85°C 120Hz •尺寸 $\varnothing D \times L$ (mm), 紋波電流(mA rms)於 85°C 120Hz

□ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 紋波電流頻率補償系數

Frequency 頻率		50Hz	120Hz	300Hz	1KHz	10KHz~	
Coefficient 系數	Ø4 ~ Ø10	0.1 ~ 68μF	0.70	1.00	1.17	1.36	1.50
		100 ~ 3300μF	0.85	1.00	1.08	1.20	1.30
	Ø12.5 ~ Ø16	~ 68μF	0.75	1.00	1.35	1.57	2.00
		100 ~ 680μF	0.80	1.00	1.23	1.34	1.50
		1000 ~ 6800μF	0.85	1.00	1.10	1.13	1.15

- Taping specifications are given in "Taping Specifications". 編帶標準請參閱“編帶標準”。
- Please refer to "Package Quantity" for the minimum package quantity. 最小包裝數量請參閱“包裝數量”。

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